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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

HOBDEN, PAMELA R

ART UNIT

PAPER NUMBER

2882

DATE MAILED: 07/31/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Applicati n No.

09/379,439

Applicant(s)

MCINTYRE ET AL.

Examiner

Pamela R. Hobden

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 24 April 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-54 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-54 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1- rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,296,603 (Turnlund et al) in view of Hughes. Turnlund et al discloses a target irradiation system comprising an x-ray source and a target object capable of becoming radioactive upon receiving the emitted x-rays. (Column 11 line 62- Column 12 line 6)

Turnlund et al fails to disclose a system with a relative positioning apparatus operable to translate the target object relative to the x-rays. Hughes discloses a relative positioning apparatus operable to translate the target object relative to the x-rays. It would be obvious to one skilled in the art to utilize a positioning apparatus in the positioning of a stent. One would be motivated to have a positioning apparatus in order to facilitate correct placement.

Regarding Claim 2: Turnlund fails to disclose a linear accelerator having an x-ray generating target. Hughes discloses the use of a linear accelerator. It would be obvious to utilize a linear accelerator in place of radiation pellets, motivated by a desire to better control the amount of radiation placed in the target site.

Regarding claim 3,4: Turnlund discloses a medical stent that has a means for shaping the x-ray beam (figure 2).

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3. Claims 5-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hughes in view of Turnlund et al (US 6,296,603).

Hughes and Turnlund's disclosure are as shown above. Hughes also discloses a An x-ray source that includes a linear accelerator having an x-ray generating target (Column 3 lines 7-15), a means for emitting an x-ray beam including the x-rays and the apparatus for irradiating target objects further comprising means for shaping the x-ray beam (30),

Regarding claim 5: A relative positioning apparatus that includes a rotatable carousel wherein at least a portion of which impinges upon and receives at least a portion of the x-rays, the rotatable carousel including at least one target mount for retaining at least one target object in fixed relation to the rotatable carousel, (figure 3, nos. 22,24,26,28),

Regarding claim 6: Wherein the rotatable carousel has at least one rotation angle at which each at least one target mount impinges upon and receives the x-rays emitted from the x-ray source and at least one rotation angle at which the at least one target mount does not receive the x-rays. (Column 6 lines 11-18), and

Regarding Claim 7,8: the relative positioning apparatus includes a tube assembly having a stationary member defining an interior path for receiving at least one of the target objects (54), and a translation assembly for moving the at least one target object along a path within the stationary member, the path impinging upon the x-rays emitted from the x-ray source. The stationary member defining an interior path is a tube (54)

Regarding Claim 9-11: The tube assembly further comprises a heat transfer apparatus supplying a heat transfer fluid within the interior of the stationary member, the translation assembly includes linear and rotational translation apparatus, comprises a plurality of members each defining an interior path and having an associated translation assembly for moving at least one of the target objects along the interior path within each of the members defining an interior path, each of the interior paths impinge upon the x-rays emitted from the x-ray source, (figure 3)

Regarding claim 12: The stationary member defines an interior path that includes an x-ray source activated by the beam of electrons to emit x-rays, (figure 3),

Regarding claim 13: the substantially stationary tube defines an internal target object conduit path (56), with a translation assembly for moving at least one of the target objects within the stationary tube along a desired path impinging upon the x-rays emitted from the x-ray source.

Regarding claims 20-24,29-33,36-37,40-54: The apparatus has an electron beam that is directed perpendicular to the axis of rotation of the rotatable carousel. (figure 2) a fixed positioning member (figure 2), an electron beam directing apparatus between the electron beam source and the x-ray conversion beam including a magnetic means for directing the electron beam (inherent in linear accelerators), a heat transfer system conducting heat away from the x-ray conversion target (inherent in x-ray targets). Hughes also discloses an apparatus as set out that comprises a chamber downstream of the x-ray source, the chamber including a target object entry port and wherein the relative positioning apparatus includes a translation armature extendable

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through the target object entry port. (figure 4), the translation armature includes a linearly translatable member mounting for receiving the at least one target object wherein the linearly translatable member defines a translation path including a first position within the chamber impinging upon the x-rays and a second position outside the chamber wherein the at least one target object is movable on the linearly translatable member between the first position and the second position through the entry port. (figure 4,5)

1. Regarding claims 14-19,25-28,34,35,38 and 39: Hughes fails to point out a sensor that measures parameters selected from a group including electron beam current, temperature monitoring device, and a radiation detector, and a control circuit controlling the electron beam provided by the electron beam source based on the parameters measured by the at least one sensor. It would be obvious to one skilled in the art to incorporate a control circuit and sensor array that measures parameters including radiation, temperature and beam current. One would be motivated to incorporate these features, because alignment can become distorted with fluxuation of temperature. A detector and monitoring circuit would be inherent when one wishes to monitor radiation.

Hughes also fails to disclose the use of a heat transfer system that includes a conduit for conveying a heat transfer fluid. It would be obvious to one skilled in the art to utilize a heat transfer liquid, because the temperatures induced by a linear accelerator are not adequately cooled by air cooling or metal conduction. He also does not specifically disclose a thermal shield upon his x-ray conversion target. This would

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also be obvious to one skilled in the art to utilize a thermal shield. One would be motivated to use such a device for the reasons discussed above, the temperatures induced by a linear accelerator are substantial, and require a thermal shield.

Hughes also fails to disclose a target with a plurality of layers wherein at least a first one of the layers comprises x-ray generating material, and electron absorption capability. It would be inherent in the art to utilize material in a target with x-ray generating material, and one would desire electron absorption in order to minimize scatter.

Hughes also fails to disclose a conversion target in the rotatable carousel. It would be obvious to one skilled in the art to utilize a conversion target in an x-ray based medical system. It would be a design choice.

### ***Response to Arguments***

4. Applicant's arguments with respect to claims 1-54 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

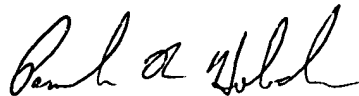
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pamela R. Hobden whose telephone number is (703)-306-5435. The examiner can normally be reached on Monday-Friday 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (703)-305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are (703)-308-7382 for regular communications and (703)-308-7722 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)-308-0956.

prh  
July 29, 2002

A handwritten signature in black ink, appearing to read "Pamela R. Hobden". The signature is fluid and cursive, with the first name "Pamela" being more prominent than the last name "Hobden".

Pamela R. Hobden